APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,514	10/14/2004	Francesco Pessolano	NL02 0312 US	4656

24738   7590   04/14/2009
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
PO BOX 3001
BRIARCLIFF MANOR, NY 10510-8001

EXAMINER
MITCHELL, JASON D

ART UNIT	PAPER NUMBER
2193	

MAIL DATE	DELIVERY MODE
04/14/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/511,514	PESSOLANO, FRANCESCO
	Examiner	Art Unit	
	Jason Mitchell	2193	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *2/9/09*.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1,2 and 4-23* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1,2 and 4-23* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☒ All b) ☐ Some * c) ☐ None of:

         1. ☒ Certified copies of the priority documents have been received.

         2. ☐ Certified copies of the priority documents have been received in Application No. _____.

         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

This action is in response to an amendment filed on 2/9/09.

Claims 1-2 and 4-23 are pending in this application.

Response to Arguments

Applicant's arguments filed 2/9/09 have been fully considered but they are not persuasive.

The applicant's traversal of the rejection seems to rely on a single argument repeatedly presented in the 1st full pars. on pp. 8 and 10 and the 2nd to last par. on pg. 11. The 1st full par. on pg. 10 is repeated here.

> Applicant respectfully asserts that Trimberger reference fails to support a prima facie case of obviousness because, the cited reference fails to teach or suggest all of the elements of the Applicant's invention, such as detecting a repeated sub-sequence in said sequence of instructions and providing an index information indicating the repetition frequency of said repeated sub-sequence, wherein said index information comprises an integer number set in proportion with a ranking of said repetition rate of said repeated sub-sequence compared to the repetition rate of other detected repeated sub-sequences.

The examiner respectfully disagrees. First it is noted the applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. Specifically the applicant has only stated that the "Trimberger reference fails to support a prima facie case of obviousness because [it] fails to teach or suggest all of the elements of the Applicants invention". A reference supports a prima facie case of obviousness when it

teaches or suggests the claim elements. Accordingly the applicant is arguing that

Trimberger fails to support prima facie obviousness because Trimberger fails to support

prima facie obviousness. More specifically, the applicant has not indicated which

aspects of the claims (other than the whole claim) are not taught.

Further, Trimberger discloses ranking the sequences from most to least used

(i.e. frequency of use; see col. 15, lines 15-18 "which … sequences are most common";

col. 15, lines 29-41 "instructions which are used least often"). The recitation of broadly

"providing" an integer "in proportion with" this ranking does not represent a patentable

distinction. In other words it would have been obvious to provide Trimberger's ranking

with an integer (i.e. 1st, 2nd, 3rd … N^{th} most used).

Additionally, in the 3rd par. on pg. 10 the applicant states:

> As described above, if the Examiner is using personal knowledge or is taking Official
> Notice of the elements of claims 4-6 which are not found in Trimberger patent,
> Applicant respectfully traverses and requests that the Examiner either provide a
> reference of references which describe such missing elements pursuant to M.P.E.P.
> § 2144, or submit an affidavit as required by 37 C.F.R. § 1.104(d) (2).

First it is respectfully noted that the examiner has not relied on 'Official Notice',

thus the traversal is in appropriate. Further, such a traversal would not be deemed

adequate because the applicant has failed to indicate the aspect of such a rejection

which the applicant asserts was not common knowledge or well-known in the art. (see

MPEP 2144.03 (C)).

Claim Objections

Claim 23 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 23 recites the 'ranking' limitation of amended parent claim 18.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-11 and 18-23 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 recites "A method … in an apparatus for data processing … detecting … providing …; and determining". This language fails to tie the claim to another statutory class (such as a particular apparatus) or transform underlying subject matter (such as an article or material) to a different state or thing. Accordingly the claim is rejected as directed to non-statutory subject matter.

Specifically the claim fails to describe statutory subject matter for two reasons. 1) "an apparatus for data processing" is broad and does not direct the claim to a particular machine. 2) the individual steps of the method are not tied to a use of the "apparatus for data processing" or any of its constituent parts. The examiner notes that an amendment directing the claim to detection of sub-sequences of a program stored in or executed on

the appropriate aspects of a general purpose computer would be deemed to tie the claim to a particular machine (i.e. the computer).

Claims 2-11 do not correct this issue and are thus rejected accordingly.

Claim 18 fails to fall within a statutory category of invention. It is directed to a program itself (i.e. a compiler), not a process occurring as a result of executing the program, a machine programmed to operate in accordance with the program or a manufacture structurally and functionally interconnected with the program in a manner which enables the program to act as a computer component and realize its functionality. It's also clearly not directed to a composition of matter. Therefore it is rejected as being non-statutory under 35 USC 101.

Specifically, the claim language "in an apparatus for data processing" modifies the intended use of the output of the compiler program and not the compiler itself. In other words, the claimed compiler software produces a sequence of instructions which can later be "processed" by an "apparatus".

Claims 19-23 depend from claim 18 and do not address this issue and are thus also rejected as being non-statutory under 35 USC 101.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 4-14 and 16-23 are rejected under 35 U.S.C. 103(a) as being

unpatentable over US 5,752,035 to Trimberger (Trimberger).

Regarding Claim 1, 12 and 18: Trimberger discloses a method for processing an

information based on a sequence of instructions in an apparatus for data processing,

said method comprising the steps of:

     detecting a repeated sub-sequence in said sequence of instructions (col. 14,

lines 65-67 identifies commonly used sequences of fixed instructions");

     providing an index information indicating the repetition frequency of said

repeated sub-sequence (col. 15, lines 15-18 "measurements made of which instructions

or instruction sequences are most common"), wherein said index information is set in

proportion with a ranking of said repetition rate of said repeated sub-sequence

compared to the repetition rate of other detected repeated sub-sequences (col. 15, lines

15-18 "which … sequences are most common"; col. 15, lines 29-41 "instructions which

are used least often"); and

     determining an allocation between a processing resource and said repeated sub-

sequence based on said index information (col. 15, lines 19-23 "These most commonly

used sequences … optimized to form a single RSIA instruction that performs the whole

task").

Trimberger does not disclose this ranking comprises an integer number.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to indicate Trimberger's ranking (col. 15, lines 39-44 "least used RISA instructions") with an integer number set in proportion with the ranking (e.g. 1st, 2nd, 3rd, ... N^{th} most used). Those of ordinary skill in the art would have been motivated to do so as a means of indicating the disclosed ranking (col. 15, lines 15-18 "which ... sequences are most common"; col. 15, lines 29-41 "instructions which are used least often"), and because of the ease of storage and manipulation (e.g. comparison) provided by the integer type.

Regarding Claims 2, 17 and 19: The rejections of claims 1, 13 and 18 are incorporated respectively; further Trimberger discloses generating an instruction containing said index information, and adding said instruction to said sequence of instructions (col. 15, lines 19-23 "form a single RSIA instruction that performs the whole task"; col. 15, lines 39-44 "least used RISA instructions are converted back into fixed instructions").

Regarding Claim 4: The rejection of claim 1 is incorporated; further Trimberger discloses said allocation is determined by comparing said ranking with the number of available processing resources (col. 15, lines 39-44 "until the used RISA instructions fit within the available configurable resources.").

Regarding Claim 5: The rejection of claim 4 is incorporated; further Trimberger discloses all repeated sub-sequences for which said integer number is smaller than said

number of available processing resources are allocated to a selected processing

resource (col. 15, lines 39-44 "until the used RISA instructions fit within the available

configurable resources.").

Regarding Claim 6: The rejection of claim 1 is incorporated; further Trimberger

discloses determining the number of instructions in a repeated sub-sequence (col. 15,

lines 19-23 "commonly used sequences ... bounded by size").

Trimberger does not disclose including the information in said index information.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to include the number of instructions in a repeated sub-sequence (col. 15,

lines 19-23 "sequences ... bounded by size") in said index information. Those of

ordinary skill in the art would have been motivated to do so in order to consolidate the

profiling information. Such a combination would be well within the ordinary level of skill

in the art and would have caused nothing but the expected results.

Regarding Claims 7 and 21: The rejections of claims 1 and 18 are incorporated

respectively; further Trimberger discloses generating an instruction for deleting said

repeated sub-sequence, if said repeated sub-sequence is no longer detected for a

predetermined time period, and resetting a processing unit to which said deleted

repeated sub-sequence was allocated (col. 15, lines 39-42 "instructions which are used least often … are converted back into fixed instructions").

Regarding Claims 8 and 22: The rejections of claims 1 and 18 are incorporated respectively; further Trimberger discloses generating an instruction for specifying processing registers used by said repeated sub-sequence, and using said instruction for locking said specified processing registers (col. 11, lines 1-4 "registers are … controlled by the RISA FPGA 120 as necessary").

Regarding Claim 9: The rejection of claim 2 is incorporated; further Trimberger discloses activating a processing resource (20-2n) when said instruction containing said index information indicates that the corresponding repeated sub-sequence has already been allocated to said processing resource (col. 7, line 66-col. 8, line 3 "The configuration store 31 may [be] accessible ... for dynamically reprogramming in a field programmable gate array 30").

Regarding Claim 10: The rejection of claim 9 is incorporated; further Trimberger discloses said activating comprises programming said processing resource according to said corresponding repeated sub-sequence, or uploading said corresponding repeated sub-sequence to a memory of said processing resource (col. 7, line 66-col. 8, line 3 "The configuration store 31 may [be] accessible ... for dynamically reprogramming in a field programmable gate array 30").

Regarding Claims 11 and 16: The rejections of claims 1 and 13 are incorporated

respectively; further Trimberger discloses signaling the presence of external processing

units to a central processing unit, and counting the number of available external

processing units based on said signaling (col. 14, lines 40-42 "object code is optimized

to fit the available configurable resources"; this necessarily requires the claimed

counting the number of available external processing units at any given point in the

execution).

Regarding Claim 13: The rejection of claim 12 is incorporated; further Trimberger

discloses connecting means for connecting at least one external processing unit to

which said repeated sub-sequence can be allocated (Fig. 1, 22).

Regarding Claim 14: The rejection of claim 13 is incorporated; further Trimberger

discloses a memory table for storing an allocation information indicating an allocation

between said at least one external processing unit and corresponding repeated sub-

sequences (col. 7, line 66-col. 8, line 3 "The configuration store 31 may [be] accessible

... for dynamically reprogramming in a field programmable gate array 30").

Regarding Claim 20: The rejection of claim 19 is incorporated; further Trimberger

discloses additional instruction is added so as to proceed said repeated sub-sequence

(col. 13, lines 30-33 "The programmed instruction is then executed upon detection of an

access to the start of the sequence in the cache, or the program can be re-compiled to
include the new programmed instruction").

Regarding Claim 23: The rejection of claim 18 is incorporated; further Trimberger
discloses determining the ranking of repeated sub-sequences based on their repetition
rate (col. 15, lines 15-18 "which … sequences are most common"; col. 15, lines 29-41
"instructions which are used least often").

**Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over US
5,752,035 to Trimberger (Trimberger) in view of Official Notice.**

Regarding Claim 15: The rejection of claim 13 is incorporated; further Trimberger
discloses, wherein said apparatus is a processor (Fig. 1, 24) and said at least one
external processing units are processor cores and/or configurable logic blocks (Fig. 1,
30).

Trimberger does not disclose the fixed processor is a DSP.

Official notice is taken that DSP's were known and used in the art at the time of
invention.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to implement Trimberger's processor as a DSP. Those of ordinary skill in the

art would have been motivated to do so as a known means of implementing the

disclosed functionality (Fig. 1, Fixed E-UNIT 24).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jason Mitchell whose telephone number is (571)272-

3728. The examiner can normally be reached on Monday-Thursday and alternate

Fridays 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bullock Lewis can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Mitchell/
Examiner, Art Unit 2193

/Lewis A. Bullock, Jr./
Supervisory Patent Examiner, Art Unit 2193